ABSTRACT

In the process of generating ZO-1 gene knockout mice, the present inventors developed gene targeting vectors that allow homologous recombination to occur at a high probability (90% or more). In addition, the present inventors used the targeting vectors for studying optimal electroporation conditions in epithelial cells, and as a result, successfully determined optimal electroporation conditions that would enable efficient gene targeting in the EpH4 mouse epithelial cell line. Use of the vectors of the present invention enables easy introduction of exogenous genes into the ZO-1 allele of ES cells. Moreover, since effects on the genomic structure need not be considered, the methods of the present invention are expected to solve problems encountered in the conventional methods for generating transgenic mice and stable transformants.